
Book Reviews

Staples, R.C., Kuhr, R.S. (eds.): Linking Research to Crop Production. New York, London: Plenum Press 1980. 235 pp., 27 figs., 48 tabs. Hard bound \$ 29.50.

The 'Green Revolution' strongly stimulated the evolution of agricultural research and resulted partly in increasing crop productivity in developing countries. However, in the last few years the 'Green Revolution' has slowed down and new progress is necessary in order to compete with the problems deriving from the rapidly increasing world population. Crop improvement programs based on research activities and some ideas concerning help in crop improvement for less developed countries are pointed out in this book which presents the proceedings of a conference organized by the Boyce Thompson Institute for Plant Research in 1979. The main topics covered are crop improvement (general paper by J.K. Coulter) and constraints to crop production (general paper by N.C. Brady). These two subjects are discussed in papers over the role of physiology (P.J. Kramer), New Genetics (P.S. Carlson), and biomass production (H.T. Hunang and L.G. Mayfield), whereas crop improvement is stressed in one paper about photosynthesis and photorespiration (I. Zelitch) and two papers on biological nitrogen fixation (M.R. Lambourg, R.W.F. Hardy). The removal of constraints to crop production is discussed in two papers on the problems of biological control of pests (T.R. Odhiambo, C.B. Huffaker). But there are also other constraints, those arising from social, political, and economic conditions. These are touched upon in three papers (R.L. Villarreal, D.W. Thomas, M.J. Esman) and have to be brought into rapport with agricultural sciences in order to be able to meet the upcoming questions. Crop improvement can bring about better living conditions for the peoples of the third world only to a limited extent alone. Social, political, and economic situations must also be considered.

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O'Donald, P.: Genetic Models of Sexual Selection. Cambridge: Cambridge University Press 1980. 250 pp., 17 figs., 50 tabs. Hard bound £ 15.00.

A source of intraspecific selection often left out of consideration in population biological modeling is that which may arise from particular systems of mating. The present book treats a sub-

class of such mating systems, which is characteristic of many dioecious animal species and refers to situations where either mating preferences or competition for mates in one sexual type is the cause of selection differentials. These are termed 'sexual selection' by the author. The model types presented are formulated for arbitrary phenotypic traits, and their evolutionary consequences are demonstrated by making certain assumptions on the mode of genetic control of the trait variation. By this way of proceeding, the author provides a proper basis for criticism of speculations on the evolutionary significance of sexual selection that rely on purely phenotypic considerations. He comes to the conclusion that his analytical results confirm the views of C.R. Darwin and R.A. Fisher, which are displayed in some detail at the beginning of the book. The qualitative contents of the conclusions are mainly concerned with possibilities of establishing genetic polymorphisms, induced by the frequency dependent nature of mating success among males, a fact that is typical of systems of sexual selection.

The analytic development of the subject matter is organized in a consistently logical and clearly arranged manner. However, to the non-expert reader it would have been very helpful if the reasonings leading to some of the basic equations for frequencies of mating types had been displayed in more detail. Moreover, the constricted usage of some widely accepted technical terms appears somewhat artificial, if not misleading. For example, sexual selection is not classified as a special case of assortative mating, which it in fact is, but rather is considered as a distinct evolutionary force. The same applies to the usage of the term 'natural selection', which is reserved for pure viability selection only, thus possibly giving the reader the false impression that sexual selection is something not explicitly involved in the creation of different average fitness values for pheno- or genotypes. Unfortunately, the author did not take the opportunity to relate his results to those known for random mating and multiplicative or additive fecundities of mating types, which exhibit an apparent resemblance to sexual selection. This, however, does not really impair the value of the book as a treatise calling to attention the significant role played by systems of non-random mating within the general frame of genetic selection theory.

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